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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,061	11/16/2001	James G. Calvin	0102314-00145	2762
21125	7590	08/23/2006	EXAMINER	
NUTTER MCCLENNEN & FISH LLP WORLD TRADE CENTER WEST 155 SEAPORT BOULEVARD BOSTON, MA 02210-2604			AHN, SAM K	
			ART UNIT	PAPER NUMBER
			2611	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/010,061

Applicant(s)

CALVIN, JAMES G.

Examiner

Sam K. Ahn

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see p.18, filed 03/31/06, with respect to the rejection(s) of claim(s) 1-50 under 103(a) have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Feldman et al. USP 6,295,272 B1 (Feldman) in view of Phanse US 6,823,028 B1 (Phanse).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4,7-11,13,32-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. USP 6,295,272 B1 (Feldman) in view of Phanse US 6,823,028 B1 (Phanse).

Regarding claim 1, Feldman teaches a method and an input/output circuit of a process control system of type that generates an analog frequency shift keying (FSK) signal for transfer across a shared media (see Fig.6) between first and second control devices (88,90 in Fig.6), the improvement wherein a modulator (40,48,52) that generates FSK signal (output of 48, note col.14, line 49) transferred by the

shared media is encoded in a pulse width modulated (PWM) signal (NRZ signal encoded by PWM, note col.7, lines 3-6). Thus, Feldman teaches transmission of FSK signal (having AUX DATA SOURCE) encoded by PWM signal (having HS DATA SOURCE) wherein the output of the transmitter transmitted across the shared media is illustrated in Figure 4.

Feldman's teaching of the shared media is a copper (see 20 in Fig.6 and note col.7, line 46) consisting of two pairs of conductors (note col.11, lines 39-40).

However, Feldman does not explicitly teach wherein the shared media comprises a transformer.

Phanse teaches a LAN system implemented using a shared media (105 in Fig.1) with copper (note col.1, line 53) having a transformer (110 in Fig.1, note col.3, line 54) wherein the LAN system operates at high speed (note col.1, line 54, 1 Gbps).

Hence, both Feldman and Phanse teach systems employing copper as the shared media operating at high data speed (note col.7, line 39 of Feldman and note col.1, line 54, 1 Gbps of Phanse). And Phanse further teaches wherein the current existing system with shared media of copper, such as the system of Feldman, may incorporate transformer, as previously explained. It is well-known to one skilled in the art that implementation of transformers in the system, such as the system of Phanse, isolates the system from the channel. And Phanse further teaches reducing DC components in a signal received via the shared media and reducing echo (note col.3, lines 54-57). Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Phanse in the system of

Feldman by implementing the transformer between the shared media and the system (88 in Fig.6) for the purpose of isolating between the shared media and the system, as previously explained.

Regarding claim 2, Feldman, as previously explained, teaches a modulator (40,48,52) that is associated with a first control device (88) and that generates the PWM signal (output of 40) and that converts the PWM signal transferred by the shared media (20, wherein explanation above teaches Harris transferring PWM signal across the transformer), and a demodulator that is associated with a second control device (90) and converts the PWM signal transferred back into the FSK signal to respective demodulators (84 for PWM and 74,50 for FSK).

Regarding claim 3, Feldman further teaches the further improvement wherein each of the first and second control devices are any of a workstation, field controller, field device, smart field device, or other device for process control (note col.1, line 30-32).

Regarding claim 4, Feldman further teaches wherein the second control device (12 in Fig.1) is the smart field device (note col.1, line 30-32), and further comprising a transmitter (12 is a transceiver comprising a transmitter and a receiver) that is coupled to the demodulator (28) and that transmits the FSK signal to/from the second control device.

Regarding claim 7, the claim is rejected as applied to claim 1 as having similar scope.

Regarding claim 8, the claim is rejected as applied to claim 1 as having similar scope.

Regarding claims 9 and 10, Feldman further teaches wherein the modulator is coupled to a modem (modulator and demodulator in a transceiver, see 26 in Fig.1) that generates the FSK signal to be transferred from a digital signal (SUBCHANNEL DATA).

Regarding claim 11, the claim is rejected as applied to claim 3 as having similar scope.

Regarding claim 13, the claim is rejected as applied to claim 1 as having similar scope.

Regarding claim 32, the claim is rejected as applied to claim 1 as having similar scope.

Regarding claim 33, the claim is rejected as applied to claim 1 as having similar scope.

Regarding claim 34, the claim is rejected as applied to claim 2 as having similar scope.

Regarding claim 35, the claim is rejected as applied to claim 2 as having similar scope.

Art Unit: 2611

Regarding claim 36, the claim is rejected as applied to claim 3 as having similar scope.

Regarding claim 38, the claim is rejected as applied to claim 1 as having similar scope.

3. Claims 5,6,14-20,22,23-29,31,39-43,45-48 and 50-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. USP 6,295,272 B1 (Feldman) in view of Phanse US 6,823,028 B1 (Phanse).and in further view of Saeki et al. USP 4,899,158 (Saeki).

Regarding claim 5, Feldman in view of Phanse teach all subject matter claimed, as applied to claim 1, however, do not explicitly teach wherein a further FSK signal transferred by the transformer is encoded in an amplitude modulated (AM) signal.

Saeki teaches a second device (10) generating FSK signal (output of 15 in Fig.1) encoded in an amplitude modulated (AM) signal (14, note col.3, lines 12-17).

Therefore, by applying the AM modulator (14 of Saeki) in the second device of Feldman (12 in Fig.1) receive the output signal (28 in Fig.1 receiving FSK signal) and further modulate the unmodulated signal (oscillator 11 of Saeki), it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Saeki in the system of Feldman for the purpose of increasing the data rate of the data being transmitted by the transmitter (note col.4, lines 30-49, wherein the AM modulated signal is further implemented to be used to carry data), hence achieve overall system increased data rate.

Art Unit: 2611

Saeki further teaches AM signal utilizing a carrier generated by a fixed duty cycle, wherein the oscillator provides clock signals, wherein the clocks output by the oscillator are well-known to one skilled in the art of providing the fixed duty cycle. Thus, Feldman in view of Phanse and Saeki teach all subject matter having a first device (10 in Fig.1 or 88 in Fig.6) generating PWM and FSK signal being transmitted to a second device (12 in Fig.1 or 90 in Fig.6) receiving the signals and generating PWM and AM signals as claimed.

Regarding claim 6, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 14, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 15, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 16, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 17, Feldman in view of Phanse teach all subject matter claimed, as applied to claim 16, and although do not explicitly teach the further limitation of FSK signal not being transferred during a period, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to analyze that when the SUBCHANNEL DATA (26 in Fig.1) is not being transferred the FSK signal would

Art Unit: 2611

inherently not be transferred. Applicant has not disclosed that not transferring FSK signal provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well not transferring the SUBCHANNEL DATA because there would less process to be performed in the receiver to remove FSK signal and demodulate the PWM signal at the second device. Therefore, it would have been obvious to one of ordinary skill in this art to modify the system Feldman of not transferring the FSK signal when less interference is desired in the system to obtain the invention as specified in claim.

Regarding claim 18, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 19, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 20, the claim is rejected as applied to claim 5 as having similar scope.

Regarding claim 23-29, the claims are rejected as applied to claim 5 as having similar scope.

Regarding claims 39-43, the claims are rejected as applied to claim 5 as having similar scope.

Regarding claims 46-48, the claims are rejected as applied to claim 5 as having similar scope.

Regarding claim 22, Feldman further teaches the further improvement wherein each of the first and second control devices are any of a workstation, field controller, field device, smart field device, or other device for process control (note col.1, line 30-32).

Regarding claim 31, the claim is rejected as applied to claim 22 as having similar scope.

Regarding claim 45, the claim is rejected as applied to claim 22 as having similar scope.

Regarding claim 50, the claim is rejected as applied to claim 22 as having similar scope.

Regarding claims 51-54, Saeki further teaches wherein FSK signal is converted to the PWM signal (note col.3, lines 1-10). And although Saeki does not explicitly teach the shared media coupled to a transformer, one skilled in the art would have recognized that shared media in any system could be implemented using the copper along with the transformer of Feldman in view of Phanse. By incorporating the teaching of Saeki in the system of Feldman, one skilled in the art would recognize that the FSK signal (output of 48 in Fig.6) would be converted to a PWM signal, hence converts to a frequency higher than the frequency component of PWM, in this case of the data T (note col.3, lines 4-8). Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Saeki

in the system of Feldman in view of Phanse for the purpose of converting to a frequency higher than the frequency component of PWM, in this case of the data T, as taught by Saeki (note col.3, lines 4-8).

4. Claims 12 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. USP 6,295,272 B1 (Feldman) in view of Phanse US 6,823,028 B1 (Phanse).and in further view of Anderson et al. USP 6,297,691 B1 (Anderson).

Regarding claim 12, Feldman in view of Phanse teach all subject matter claimed, however, do not explicitly teach wherein the FSK signal is compatible with any of a FoxComm, HART or other analog control signal format.

Anderson teaches FSK signals supporting FoxComm, HART or other analog control signal format (note col.1, lines 35-46). Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Anderson in the system of Feldman for the purpose of providing the FSK signals onto the two-wire communications line, as taught by Anderson (note col.1, lines 44-46) wherein Feldman in view of Harris and AAPA as previously explained provides FSK being transmitted across the transformer coupled to the two-wire communications line.

Regarding claim 37, the claim is rejected as applied to claim 12 as having similar scope.

5. Claims 21,30,44 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. USP 6,295,272 B1 (Feldman) in view of Phanse US 6,823,028 B1 (Phanse).and in further view of Saeki et al. USP 4,899,158 (Saeki) and Anderson et al. USP 6,297,691 B1 (Anderson).

Regarding claim 21, Feldman in view of Phanse and in further view of Saeki teach all subject matter claimed, however, do not explicitly teach wherein the FSK signal is compatible with any of a FoxComm, HART or other analog control signal format.

Anderson teaches FSK signals supporting FoxComm, HART or other analog control signal format (note col.1, lines 35-46). Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the teaching of Anderson in the system of Feldman for the purpose of providing the FSK signals onto the two-wire communications line, as taught by Anderson (note col.1, lines 44-46) wherein Feldman in view of Harris and AAPA as previously explained provides FSK being transmitted across the transformer coupled to the two-wire communications line.

Regarding claim 30, the claim is rejected as applied to claim 21 as having similar scope.

Regarding claim 44, the claim is rejected as applied to claim 21 as having similar scope.

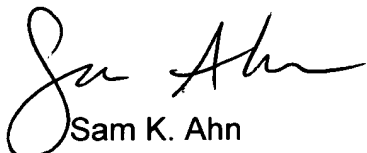
Art Unit: 2611

Regarding claim 49, the claim is rejected as applied to claim 21 as having similar scope.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sam K. Ahn
Patent Examiner

8/20/06